

## ABSTRACT

A vehicle controller for controlling the air-fuel ratio of an engine is provided. In one embodiment, the controller comprises a first exhaust gas sensor provided downstream of the catalyst for detecting oxygen concentration of exhaust gas, a first decimation filter connected to the first exhaust gas sensor, and a control unit connected to the first decimation filter. The control unit determines a manipulated variable for manipulating the air-fuel ratio. The first decimation filter oversamples, low-pass filters and then downsamples the output of the first exhaust gas sensor. The first decimation filter can remove chemical noise from the output of the exhaust gas sensor. In another embodiment, a second decimation filter is connected to a second exhaust gas sensor provided upstream of the catalyst for detecting the air-fuel ratio of the exhaust gas. The second decimation filter oversamples, low-pass filters and then downsamples the output of the second exhaust gas sensor. The second decimation filter can compensate the shortage of resolution of the air-fuel ratio sensor.